

This listing of claims will replace all prior versions, and listings, of claims in the application:

**Listing of Claims:**

1-10. (cancelled)

11. (currently amended) A method of operating a high field MRI system comprising the steps of:

(a) acquiring NMR signals from a patient;

(b) extracting tissue temperature data from at least some of the NMR signals;

5 (c) extracting tissue image data from at least some of the NMR signals for the production of an MRI image; and

(d) repeating steps (a)-(c) while the tissue temperature measurements are below a safety threshold.

10 ~~The method of claim 1~~ wherein the extracting tissue temperature data from the NMR signals detects saturation of spins by a narrow band saturating RF waveforms at a resonant frequency of protons at temperatures at the safety threshold.

12-20. (cancelled).

21. (currently amended) A high field MRI system comprising:

a polarizing magnet sized to receive at least a portion of a patient;

RF transceiver electronics for stimulating the patient tissue in the polarizing magnetic field to acquire NMR signals from a patient;

5 image processing electronics operating to:

(i) extracting tissue temperature data from at least some of the NMR signals;

(ii) extracting tissue image data from at least some of the NMR signals for the production of an MRI image; and

10      (iii) repeating collection of NMR signals for the production of an MRI image  
only while the tissue temperature measurements are below a safety threshold;

~~The high field MRI system of claim 12~~ wherein the image processing electronics extracts tissue temperature data from the NMR signals detects saturation of spins by a narrow band saturating RF waveform at a resonant frequency of protons at temperatures at the safety threshold.

22.      (original) A local coil comprising:  
        an antenna array coupling to a region of interest in a patient;  
        a conductor for connecting the antenna array to signal processing circuitry of  
an MRI machine; and  
5          a local oscillator producing a narrow band radiofrequency signal saturating  
tissue protons only when the tissue has reached a safety temperature limit.

23.      (original) The local coil of claim 22 wherein the local oscillator includes a signal lead communicating with the MRI machine to turn the local oscillator on and off.

24-27. (cancelled)